

CONVERTIBLE DEVICE WITH MULTIPLE USEFUL CONFIGURATIONS

Background

Field of the Invention

[1001] The invention relates to reconfigurable children's toys, and more particularly to children's toys that can be useful in two or more configurations.

[1002] There are numerous children's toys and activity centers that are useful to entertain and stimulate children. Children quickly outgrow such toys and constantly require new devices to assist in the development of various motor skills, while still attracting the child's attention. Activity mats or gyms are used to stimulate infants and possibly to develop some fine motor skills such as grasping objects, pressing buttons, sliding switches, etc. Other devices such as slides and steps can help to develop motor skills while providing a degree of entertainment.

[1003] Often devices that are usable by infants or smaller children quickly surpass their useful life as the infant grows and develops more advanced skills or as the infant becomes bored with the device. Such devices are often either discarded or perhaps stored for later use by another infant. As the child outgrows the devices, new devices are typically purchased to enable the child to attain the next stage in the development process. Some devices are collapsible for storage purposes, but are only useful in their expanded (i.e., set up) position.

[1004] Thus, there is a need for a single device that can be changed from a infant activity gym to a toddler activity device to provide a continuous play environment for small children at varying levels of development without the added cost of purchasing a separate device.

Summary of the Invention

[1005] The invention includes a base member configured to be parallel to a support surface, a support member pivotally coupled to the base member and an extension member. The support member is movable between a first configuration in which the support member is substantially perpendicular to the base member and a second configuration in which the support member is substantially parallel to the base member and the support surface. The extension member is movable between a first configuration in which the extension member is retracted and a second configuration in which the extension member is coupled to the support member and angularly disposed with respect to the support member.

[1006] In embodiments of the invention, the device may also include actuators and audio and visual output. The output may include sounds and lights, or may include dials, buttons, switches, etc., which output mechanical sounds and visual images.

[1007] These and other aspects of the invention will become apparent from the following drawings and description.

Brief Description of the Drawings

[1008] The invention is described with reference to the accompanying drawings. In the drawings, like reference numbers indicate similar elements.

[1009] FIG. 1 is a schematic drawing of a device according to an embodiment of the invention.

[1010] FIG. 2 is a schematic drawing of a device according to another embodiment of the invention.

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[1011] FIG. 3 is a schematic drawing of a device according to a further embodiment of the invention.

[1012] FIG. 4 is a schematic drawing of a device according to another embodiment of the invention.

[1013] FIG. 5 is a schematic drawing of a device according to yet another embodiment of the invention.

[1014] FIG. 6 is a perspective view of a device according to an embodiment of the invention in a first configuration.

[1015] FIG. 7 is a perspective view of the device of FIG. 6 in a second configuration.

[1016] FIGS. 8A-8D depict movement of the device of FIG. 6 from a first configuration to a second configuration.

[1017] FIG. 9 is a cross-sectional view of the device of FIG. 6, taken along the line 9-9 in FIG. 6.

[1018] FIG. 10 is a schematic illustration of an exemplary audio and visual output system.

Detailed Description

[1019] Several embodiments of a children's entertainment device or toy 100 incorporating the principles of the invention are shown in FIGS. 1-10. A general description of the device is presented first, followed by a description of various implementations.

[1020] FIGS. 1-5 are schematic illustrations of embodiments of the relationship of various components of device 100. As illustrated in FIGS. 1-5, the device 100 includes a base member 10, an activity member 20, and a slide member 30. The base member 10, the activity member 20, and the slide member 30 may be organized in a variety of configurations. The device 100 is configurable between a first configuration and a second configuration. The device 100 is usable

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whether disposed in the first configuration or the second configuration. For example, in the first configuration, the activity member 20 is accessible by a child and is usable as an activity or entertainment device. In the second configuration, the slide member 30 is usable by the child. As indicated by the arrows in FIGS. 1 and 2, the activity member 20 can move with respect to the base member 10 to move between the various configurations of the device 100.

[1021] In FIG. 1, the activity member 20 is in an upright configuration with respect to the base member 10 in the first, activity configuration. The activity member 20 is configured such that a child can engage the activity member 20 while the child is situated on the base member 10. The slide member 30 is not separately illustrated in FIG. 1. In the illustrated embodiment, the slide member 30 can be removed from the device 100 and separately stored. Alternatively, the activity member can be pivoted away from the base member 10 and positioned as the slide member 30 (i.e., disposed angularly with respect to the base member 10).

[1022] In another embodiment as illustrated in FIG. 2, the device 100 is arranged in the second configuration with the activity member 20 disposed in a step configuration and the slide member 30 arranged to allow a child to traverse the upper surface of the activity member 20 and proceed down the slide member 30.

[1023] As shown in FIGS. 3-5, the slide member 30 may be stored within the device 100 in a variety of configurations.

[1024] In the embodiment illustrated in FIG. 3, the slide member 30 is partially disposed within the activity member 20. Another portion of the slide member 30 is disposed within the base member 10. In the illustrated embodiment, the slide member may be either slidably or pivotably coupled to the activity member 20.

[1025] In the embodiment illustrated in FIG. 4, the slide member 30 is disposed substantially within the bottom of the base member 10. The slide member may be slidably or pivotably coupled to the base member 10 and may be removed from the base member 10 and coupled to the activity member 20 to position the device 100 in the second configuration.

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[1026] In the embodiment illustrated in FIG 5, the slide member is disposed angularly within the base member 10. In the illustrated embodiment, the slide member may be slidably or pivotably coupled to the base member 10.

[1027] In any of the embodiments described herein, the slide member 30 may be pivotably coupled, releasably coupled, or slidably coupled to the activity center 20 or to the base member 10. In the first configuration, the slide member may be completely or partially removed from the device or retracted within the device 100. For example, the slide member 30 may be pivotably coupled to the activity member 20 and folded under the base member 10 in the first configuration. Alternatively, the slide member 30 may be removably coupled to the device 100 and either separated from the device 100, attached to the outside of the device 100, or placed within the device 100 when in the first configuration. The slide member 30 may also be configured to slide into and out of either the base member 10 or the activity member 20 to move between the first configuration and the second configuration.

[1028] The activity member 20 may also be removable and configured to be placed in a number of configurations on or adjacent to the base member. For example, the activity member 20 may be configured to be placed in one of several locations on the base member 10 and then placed adjacent to slide member 30 in the second configuration.

[1029] The base member 10 may be any one of several shapes including but not limited to a circle, oval, square, rectangle, pentagon, etc. The base member 10 is configured so that a child can crawl, slide or climb onto the base member 10 in the first configuration and then onto at least a portion of the activity member 20 in the second configuration.

[1030] The base member 10 may have toys and objects attached to the base including arc members 52, 54 described in detail below. Other features such as toy animals, graspable articles etc. may also be attached to the base member 10. The device may be attached to a larger play system including other modular play devices.

[1031] One implementation of the device discussed above is now described with reference to FIGS. 6-10. The device 100 includes a base member 10, an activity member 20, and a slide

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member 30. FIG. 6 illustrates the device 100 in a first configuration. FIG. 7 illustrates the device 100 in the second configuration. FIG. 9 is a cross-sectional view of the device 100 in the first configuration.

[1032] In the illustrated embodiment, the base member 10 is generally square and planar with two opposing beveled edge portions 12, 14 sloping up from the edge of the base member 10 to a slightly elevated center portion 16. When the device 100 is in the activity configuration, the slide member 30 is concealed under the slightly elevated center portion 16.

[1033] The activity member 20 includes a step face 22 and an activity face 24. The activity member 20 is pivotably coupled to the base member 10 along an edge between the beveled edge portions 12, 14. The activity member 20 includes a pivot 28 located at the junction of the activity face 24 and the base member 10. The activity member 20 can pivot between the first or activity configuration, where the activity member 20 is perpendicular to the base member 10, and the second or slide configuration, where the activity member 20 is parallel to the base member 10. The step face 22 is longer than the activity face 24 and extends below the elevated surface 16 of the base member 10 and includes an extended portion 25.

[1034] When the device 100 is in the first configuration, activity member 20 is positioned such that the activity face 24 is readily accessed by a child positioned on device 100. The activity face 24 can include many entertainment features such as a ball play center 26 and actuators 44, 46. When activated, the actuators 44, 46 cause a visual or audible output or both visual and audible output. In the illustrated embodiment, the actuators include a rocker switch 44 and a button 46, each coupled to an output generation system 70. When the rocker switch 44 is toggled between different positions, different audio or visual outputs are generated and output through video and audio transducers (not shown). Similarly, the button actuator 46 causes sounds and lights to be output when actuated.

[1035] When the device 100 is in the second configuration, as shown in FIG. 7, the step face 22 of the activity member is substantially parallel with the base member 10 and faces upwardly with respect to the support surface on which the device 100 is positioned. The slide member 30 is disposed adjacent to the step face 22, allowing a child to climb onto the step face 22 of the

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activity member 20 and proceed down the slide member 30. The activity face 24 of the activity member 20 contacts the base member 10. When sufficient force is applied to the step face 22, such as, for example, when a child sits or steps on the step face 22, one or more of the actuators 44, 46 can be pushed against the base member 10 and activated, causing sounds and/or lights to be output. The audible and/or visual output that is produced when the device 100 is in the first configuration may be the same as or different than the audible and/or visual output that is produced when the device 100 is in the second configuration. Additionally, sounds and or lights may be output when the device 100 is moved between the first and second configurations.

[1036] In the illustrated embodiment, the slide member 30 is pivotably coupled to the activity member 20 at a pivot or hinge 32 coupled to the extended portion 25 of the step face 22. When the device 100 is in the second configuration, the slide member 30 extends from the activity member 20 at an angle down to the support surface on which the device 100 is disposed.

[1037] Arc members 52, 54 can be coupled on opposing sides of and adjacent to the corners of the base member 10. The arc members 52, 54 extend above the base member. In the illustrated embodiment, the arc members are substantially parallel to one another and are formed from a rigid material. The arc members 52, 54 are located such that they can be used as support rails for a child using the slide member 30 in the second configuration or as crawl-through activity arcs in the first configuration. The arc members 52, 54 may also be used by a child to assist the child in moving from a sitting to a standing position.

[1038] Arc members 52, 54 can include arc activity centers 62, 64, 66, 68 disposed thereon. The activity centers 62, 64, 66, 68 can be configured to be used with balls or other play objects (not illustrated). The arc activity centers 62, 64, 66, 68 are useful in encouraging standing and coordination development. In other embodiments, the arc activity centers may include activity devices such as dials, buttons, textures, hanging toys or other child activity toys.

[1039] FIGS. 8A-8D illustrate a sequence of moving the device from a first configuration to a second configuration. FIG. 8A illustrates the device 100 in the first configuration. As illustrated in FIG. 8B, by lifting the device 100 and pivoting the activity member 20 towards the base member 10, the slide member 30 pivots out from under the base member 10. As illustrated

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in FIG. 8C, after the activity member 20 is pivoted to a position parallel to the base member 10, the slide member 30 is partially pivoted to the fully extended orientation of the second configuration. The slide member 30 can then be pivoted to its fully extended position as illustrated in FIG. 8D.

[1040] To convert the device 100 from the second configuration back to the first configuration, the device 100 is lifted and the activity member 20 is pivoted to the upright position of the first configuration. The slide member 30 is retracted under the base member 10, completing the conversion.

[1041] FIG. 10 shows a functional block diagram of an exemplary of the audio-visual output system suitable for use with the device 100. As shown in Figure 10, the device 100 includes a controller 130, an input block 40, a control block 90, and an output block 80. In response to user input via the input block 40, the control block 90 controls the output of selected output, such as musical notes, sound effects, light patterns or combinations of musical notes and light patterns, from the output block 80. Regardless of the orientation of the device 100 (i.e., in the first configuration or the second configuration) the functionality described with respect to Figure 10 is the same.

[1042] Output block 80 includes output content 82, which includes audio content 82A, and video content 82B. Audio content 82A can include, for example, in either digital or analog form, musical tones (which can be combined to form musical compositions), speech (recorded or synthesized), or sounds (including recorded natural sounds, or electronically synthesized sounds). Video content 82B can include, for example, in analog or digital form, still or video images, or simply control signals for activation of lamps or other light-emitting devices.

[1043] The output content can be communicated to a user for hearing, or viewing, by output generator 70, which can include an audio output generator 74, and a video output generator 76. Audio output generator 74 can include an audio signal generator 74A, which converts audio output content 82A into signals suitable for driving an audio transducer 74B, such as a speaker, for converting the signals into audible sound waves. Video output generator can include a video signal generator 76A, which converts video output content 82B into signals suitable for driving a

video transducer 76B, such as a display screen or lights, for converting the signals into visible light waves. Video output generator 76 can also include moving physical objects, such as miniature figures, to produce visual stimulus to the user. The selection of the output content 82, and the performance attributes of the output generators, should be driven by the goal of generating output that is appealing or entertaining to a child user.

[1044] Control block 90 controls output block 80, selecting the output content to be output and activating the output generator 70 to operate on the selected output content. The operation of control block 90 can be governed by control logic 92, which can be, for example, computer software code. Control logic 92 can select content to be output repetitively or non-repetitively, and/or randomly or in fixed sequences. The video and audio output can be coordinated to enhance the desired entertaining effect.

[1045] User input block 40 can include a mode selector 48, the first actuator 44, and a second actuator 46, by which the user can provide input to control block 90 to influence the selection of output content and to initiate its output. Mode selector 48 allows the user to select from among output modes. Illustrative output modes include variations of combined video and audio output. For example, the audio content 82A can include a set of musical tones and a set of sound effect segments, and the video content can include a selected sequence of illumination instructions for lamps. Control logic 92 includes sets of sequences in which the musical tones can be output to produce recognizable tunes. Various modes of light operation (i.e., direction of light transmission) may be selected. A program can include a predetermined sequential output of the sets of tone sequences, producing a sequence of musical tunes. Lamps can be illuminated in response to a set of illumination instructions correlated with the playing of the tunes.

[1046] While particular, illustrative embodiments of the invention have been described, numerous variations and modifications exist that would not depart from the scope of the invention. For example, the device 100 can be configured to be repositioned using a motor-driven assembly rather than being repositioned manually.

[1047] Although the device 100 is described above as having two actuators positioned on the activity member 20, in an alternative embodiment, the device 100 may include multiple

actuators, including actuators disposed on or beneath the base member 10, on the arc members 52, 54, on or beneath the slide member 30, or other at other positions of the device 100.

[1048] Additionally, although actuators 44, 46 are described above as mechanical switches, the actuators may be motion detectors, IR switches or other similar actuators to detect motion or position of a child using the device 100. For example, an IR switch may be placed in an opening between two ends of an arc member 52, 54 to detect when an object or a child passes through the arc. Alternatively, pressure switches may be located in the base member 10, the step surface 22 of the activity center 20, or the slide member 30 to cause an output when a child or an object passes over the actuator. A specific output pattern from the output 80 may also be uniquely associated with a particular input. Actuators may also be in the activity centers 62, 64, 66, 26 to respond to objects contacting or passing through the activity center.

[1049] Although the position of the lights and speakers were not described specifically above, the lights and speakers may be placed in various locations on the device 100. Portions of the base member 10 or one or both of the arc members 52, 54 may be illuminated either randomly or sequentially. Additionally, lights may follow the path of a child down the slide 30 or around the device 100. Additional speakers may also be used in various locations on the device 100 to have location specific sounds such as character sounds.

[1050] Although the switches discussed above were input actuators, and mode select switches the device 100 can include on/off switches and/or volume switches to modify the effect of the audio-visual output system. The audio-visual output system may also include a selector switch to vary the output or volume or both.

[1051] Although the actuators are described above as causing electronic output, other actuators may output mechanical sounds and visually appealing patterns such as a corn popper, a spinning wheel, a knob with a window, a squeaker button, etc.

[1052] In the illustrated embodiments, the various components of the device 100 are formed of plastic materials, but any other material suitable for the intended use can be utilized.

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[1053] Although the arc members 52, 54 are described above as being substantially parallel to one another and rigid in configuration, in an alternative embodiment, the arc members 52, 54 can be covered with softgoods or can be substantially flexible. Additionally, the arc members 52, 54 can be positioned in a crossing pattern. Additional components may be made of other materials including fabric, softgoods, foam or other appropriate materials.

[1054] Although not described in the embodiments illustrated above, the base member 10 can be covered in softgoods. The softgoods can be removably coupled to the base member 10 such that they can be removed for washing or as the child gets older and the softgoods are no longer necessary.

[1055] Although the activity member 20 is illustrated as a substantially flat, rectangular panel, in alternative embodiments, the activity member 20 may be any shape and configuration.

[1056] While particular, illustrative embodiments have been described, numerous variations and modifications exist that would not depart from the scope of the invention.

Conclusion

[1057] While various embodiments of the invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of the invention should not be limited by any of the above-described embodiments, but should be defined only in accordance with the following claims and their equivalents.

[1058] The previous description of the embodiments is provided to enable any person skilled in the art to make or use the invention. While the invention has been particularly shown and described with reference to embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention.